UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,497	09/05/2003	Mansoor Ali Khan Alicherry	7-7-6-22	8348

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EXAMINER
PHAN, MAN U

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/656,497	ALICHERRY ET AL.
	Examiner	Art Unit	
	Man Phan	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 September 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-32</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5,11-21 and 27-32</u> is/are rejected.

7)☒ Claim(s) <u>6-10 and 22-26</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date <u>4/8/04</u>.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   The application of Alicherry et al. for the "Routing and design in K-shared network" filed

09/05/2003 has been examined.   Claims 1-32 are pending in the application.

2.   The applicant should use this period for response to thoroughly and very closely proof

read and review the whole of the application for correct correlation between reference numerals

in the textual portion of the Specification and Drawings along with any minor spelling errors,

general typographical errors, accuracy, assurance of proper use for Trademarks [TM], and other

legal symbols @, where required, and clarity of meaning in the Specification, Drawings, and

specifically the claims (i.e., provide proper antecedent basis for "the" and "said" within each

claim). Minor typographical errors could render a Patent unenforceable and so the applicant is

strongly encouraged to aid in this endeavor.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

4.   Claims 16 and 32 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. With respect to exemplary independent claims 16 and

32, they are an abstract idea, as a disembodied mathematical algorithm. Independent claims 16

and 32 don't not result in a physical transformation outside of a computer. There is always some

form of physical transformation within a computer because a computer acts on signals and transforms them during its operation and changes the state of its components during the execution of a process. Even though such a physical transformation occurs within a computer, such activity is not determinative of whether the process is statutory because such transformation alone does not distinguish a statutory computer process from a nonstatutory computer process. What is determinative is not how the computer performs the process, but what the computer does to achieve a practical application. See MPEP 2106 IV (B) (2) (b) (ii). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See MPEP 2106 IV (B) (2) (b) (ii). 6. Independent claims 16 and 32 are directed towards an automated method and apparatus of "designing a network" as recited in the preamble. Within the claim language itself, a step of "computing candidate paths" is performed by determining one or more "demands" and also applying "an integer linear program" for using network equipment within the network. What is not disclosed by the claim is how these determined values are subsequently used in the actual design of a network and therefore are deemed nonstatutory for not producing something that is concrete, tangible and useful. The "computing" steps are deemed algorithmic steps of pure data manipulation which do not culminate into a concrete, tangible and useful result and furthermore it is unclear if there is any actual result from the method as claimed. Even further, the step of "applying an integer linear program formulation" does not yield a real world result and is equitant to "thinking about a network". The claim is actually drawn to non-functional descriptive material stored on a computing program medium. The description given in the specification does not cure this problem. In practical terms, claims

define non-statutory processes if they simply manipulate abstract ideas, e.g., a bid or a bubble hierarchy, without some claimed practical application, Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59; Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759.

5. Claims 16 and 32 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8.   Claims 1-5, 11-15 and 17-21, 27-31 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gunluk (US#7,023,806) in view of Chen et al. (US#7,058,012).

With respect to claims 1-5, 15 and 17-21, 31, the references disclose a novel system and

method for determining a route for a demand in a network routing, according to the essential

features of the claims. Gunluk (US#7,023,806) discloses a method of determining a route for

transmitting signals through a network. The method comprises obtaining and storing network

and demand data. Network data may include, for example, link type data, spare capacity data,

vendor data, and common mileage data (representing the network). Demand data may include,

for example, origination node data, termination node data, and diversity requirement data. The

demand data is then processed using a shortest path routing method to obtain an initial route and

the network data is updated. An initial cost based on the initial route is computed (See Fig. 1;

Col. 2, lines 20 plus and Col. 3, lines 9 plus). Gunluk (US#7,023,806) further teaches in Fig. 2 a

flow diagram of a method 200 for routing demands in accordance with the present invention.

Method 200 begins with obtaining the input demand and network data described above (step

202). The network data described above is processed to construct a representation of the network

and relevant data structures are populated (step 204). Demands T are then individually routed

(decision 206). If a demand $T.sub.j$ has already been routed on route $R.sub.j$ and is required to be

diverse from $T.sub.i$, i.e., $T.sub.j$ is included in $D.sub.i$, the links of $R.sub.j$ should be marked or

identified in some manner (step 208). Demand $T.sub.i$ is then routed on route $R.sub.i$ using a

shortest path algorithm (step 210). Route $R.sub.i$ is stored (step 212). The network representation

originally stored in step 204 is then updated to reduce the link capacities used in route $R.sub.i$

(step 214). This process is repeated until there are no more demands $T.sub.i$ (decision 206). The

initial cost of the solution for all demands is computed (step 216). A "specialized" shortest path

algorithm is provided to find the shortest path for each demand $T.sub.i$ that will increase the

overall cost least, while maintaining the other routes fixed. This specialized shortest path

algorithm is referred to as the Constrained Diverse Shortest Path Method (CDSPM) and is set

forth in detail in Fig. 3. The shortest route $R.sub.i'$ from origination node $A.sub.i$ to termination

node $Z.sub.i$ is determined using a known shortest path algorithm to route demand $T.sub.i$ (step

308). Once route $R.sub.i'$ is established, the diversity requirements and OT constraints are

checked to see if route $R.sub.i'$ violates them (decision 310). If route $R.sub.i'$ does not violate

them, then the route is acceptable and is provided to the routing method of Fig. 2, e.g., at step

226 (step 312). CDSPM is complete (Col. 8, lines 34 plus).

In the same field of endeavor, Chen et al. (US#7,058,012) teaches a system for automatic

end-to-end path provisioning for an optical network utilizing a network management system,

wherein the least cost path is the shortest path based on the number of network element hops.

The system for automatic end-to-end path provisioning for an optical network by a network

management system generally comprises an input device for obtaining path parameters for each

network element of the network and a processor for automatically performing discovery of paths

including determine connection possibilities based upon the path parameters and for

automatically provisioning an end-to-end STS-n path based on the paths resulting from the

discovery, wherein the automatic provisioning includes selecting a least cost path from the

discovered paths and setting the least cost path as the working path, and wherein the least cost

path is the shortest path based on the number of network element hops (See Fig. 6; Col. 2, lines

31 plus and Col. 7, lines 42 plus).

Regarding claims 11-14 and 27-30, Chen further teaches in Fig. 8 is a flow chart illustrating an automatic path provisioning process 800. At step 802, the network management system obtains path parameters such as from the administrator via the GUI. Examples of path parameters include bandwidth size, start NE, end NE, path trace, section trace, cross connect direction (one way or two way), pass through, and add-drop facility. In particular, the network management system checks load information and available bandwidth information of scheduled cross connection for each NE. The network management system may also check for connection possibilities. According to one preferred embodiment, the network management system may query each NE to determine if the NE has the appropriate bandwidth and facility for the end-to-end path to be provisioned. Next, at step 804, the network management system performs automatic discovery of paths based on the links, cross connection, equipment, facilities and availability information for the NEs as obtained in step 802. The network management system optionally builds a list of all connection possibilities for the end-to-end path. In one embodiment, the system then selects the shortest or otherwise least-cost path as the working path and the second shortest or least-cost path as the protection path. It is noted that for the BLSR protection scheme, the system only provisions the working path and, in the event of error, fault, or other failure, the ring map stored by each NE is utilized to determine the protection path such that each NE determines the next hop in the event of error or fault (Col. 2, lines 40 plus and Col. 9, lines 11 plus).

One skilled in the art of communications would recognize the need for determining a route for a demand in a network routing, and would apply Chen's novel use of the automatic end to end paths for SONET networks into Gunluk's method of routing signals over an optical

network while satisfying diversity requirements and other network constraints. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Chen's systems and methods for automatic end to end path provisioning for SONET networks into Gunluk's method for routing optical; signals with diversity requirements with the motivation being to provide a system and method for routing and design in K-shared network.

Allowable Subject Matter

9.   Claims 6-10 and 22-26 are objected to as being dependent upon the rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. .

10.   The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein a pair of channels may be represented as $l.sup.i$ and $m.sup.j$ incident on a node u such that the channel connectivity representation step further comprises: when the pair of channels are already connected at u, adding a zero-cost edge between $u(l, i)$ and $u(m,j)$; and otherwise, when both of the channels have degrees less than a value K at u, connecting them with an edge having a cost .epsilon., where cost .epsilon. is greater than zero and substantially smaller than one, as specifically recited in the claims.

11.   Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the

issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Egner et al. (US#2003/0099014) is cited to show the system and method for optimized design of an optical network.

The Campbell et al. (US#2002/0073393) is cited to show the system and method for automatically designing communications circuits.

The Zimmel et al. (US#2003/0023706) is cited to show the apparatus and method for optimizing telecommunications network design using weighted span classification and rerouting rings that fail to pass a cost threshold.

The Wakamatsu et al. (US#6,023,501) is cited to show the least cost routing method with repeated searches for lower cost route.

The Stumer et al. (US#5,892,819) is cited to show the method of managing call forwarding .

The Maeno (US#2002/0118647) is cited to show the minimum cost routing based on relative costs of node resources.

The Miyao (US#6,141,318) is cited to show the network design method.

13.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149. The

examiner can normally be reached on Mon - Fri from 6:00 to 3:00.
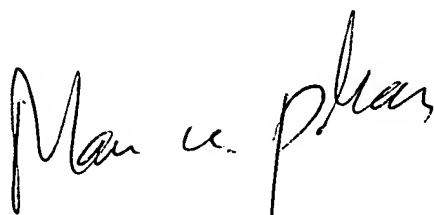
If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wellington Chin, can be reached on (571) 272-3134. The fax phone number for the

organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (571) 272-2600.

14.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for

unpublished applications is available through Private PAIR only. For more information about

the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to

the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-

9197.

Mphan

06/14/2007.

MAN U. PHAN
PRIMARY EXAMINER